INTRODUCTION

Following discussions with the National Economic Development Office (N.E.D.O.) the Management Consultants' Association (M.C.A.) put forward proposals on 24th October 1963 for a survey to widen knowledge of the factors which determine decisions to invest in machine tools. These proposals recommended a pilot study to be followed by a full investigation.

On 10th June 1964 N.E.D.O. and the Machine Tool Trades Association (M.T.T.A.) authorised M.C.A. to undertake the pilot study. This report records the findings of the study and includes a number of recommendations which we have thought it appropriate to make.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The study involved visits to a representative sample of 60 companies in the engineering industry, 55 of which were past or present clients of the members of our Association and at each company enquiries were made in considerable depth. In interpreting the results of our visits we were also able to draw on the extensive knowledge of these 55 firms possessed by the members concerned and also on the corporate experience of our Association. It has thus been possible to reach practical and realistic conclusions within our terms of reference and in some cases to make recommendations for action.

It is interesting to note that the general pattern of our findings began to emerge after we had completed something less than half our visits, the remaining visits serving to confirm the pattern and to substantiate it with additional data. We are, therefore, confident that the findings, supported as they are by our combined experience, are representative of the engineering industry and while a fuller investigation would provide additional data and might throw up further aspects we are satisfied that it would not alter the main findings.

In undertaking the study we were aware that some of the areas to be covered had already been the subject of investigation by other individuals and organisations. We, therefore, re-examined many of the relevant previous studies and some of these are listed in Appendix IV.

It is thought that the present report is the first comprehensive attempt in the United Kingdom to identify specifically the circumstances in which management in the engineering industry invests in new machinery and the factors taken into account when doing so.

FINDINGS

Detailed findings are contained in the body of the report but the following are considered to be the most important:

(a) The substantial tax concessions allowed to purchasers of machine tools and which are intended to stimulate investment in such tools are having a very limited effect. In fact 95 per cent of our sample said the concessions had little or no direct influence on their investment decisions while only 27 per cent acknowledged that the concessions had an indirect influence by making more money available to them. However, of the latter only slightly more than half—15 per cent of the total sample—were reasonably certain that the concessions had resulted in their buying more machine tools than they would otherwise have done.

The main reasons for this lack of influence are the delay before the allowance is recovered, lack of appreciation in industry of the extent and effect of the concessions and the frequent changes which have occurred in them.

(*b*) The methods of investment appraisal in use by most of the companies in the engineering industry are either non-existent or inaccurate and misleading. 22 per cent of our sample used no established method while of the remaining 78 per cent all employed the "pay back" method for appraising normal investments but only 5 per cent took tax allowances into account. While the "pay back" method ignoring tax concessions may not have been unreasonable in the days when the allowances were comparatively small these are now of such magnitude as to make any appraisal method which does not take them into account misleading.

Of the 73 per cent using "pay back" without taking the tax concessions into account a small proportion were using pay back periods which seemed reasonable having regard to the return on investment expected. This, however, appeared to us fortuitous rather than deliberate.

(*c*) As a result of the foregoing many firms in the engineering industry must be failing to recognise worthwhile investments and are thus losing the benefits which greater use of modern machine tools would achieve.

RECOMMENDATIONS

It is recommended that:

(*a*) Alternatives to the present method of encouraging investment through the existing tax concessions should be investigated forthwith. These could take the form of an immediate repayment to the purchaser of an amount equivalent to the tax relief on at least the investment allowance or the introduction of a capital reserve scheme. Further details of these suggestions and of other alternatives are contained in the body of the report.

If it is decided to continue with the present basis there must be much greater publicity of the magnitude of the present concessions and what they mean to industry.

However, regardless of the method finally adopted there must also be some guarantee of continuity to convince industry that Government intention is to promote steady industrial growth and that the concessions are not just a temporary injection to correct a short term fluctuation in the economy.

(*b*) Industry should be provided with a simple and readily usable procedure to enable the average industrialist to appraise an investment accurately taking taxation and tax concessions into account. This accurate appraisal would be a basic factor in any investment decision.

TERMS OF REFERENCE

Our brief as received from the National Economic Development Office and the Machine Tools Trades Association was as follows:

Questions for the Management Consultants' Association Survey of Investment in Machine Tools

The purpose of this survey is to widen knowledge of the factors which determine decisions to invest in machine tools. The enquiry is directed at users of machine tools—both home produced and imported—and should not be regarded as an investigation of the U.K. machine tool industry.

The field which National Economic Development Office and the Machine Tool Trades Association would like covered is set out in the following broad questions:

Finance

- (*a*) What are the current methods of investment appraisal? What, for example, is the minimum rate of return that is acceptable? Under what circumstances is the price of machine tools seen as a determining factor?
- (*b*) Are present methods of investment appraisal adequate? If they are not, why are better methods not used?
- (*c*) What influence do tax concessions have on investment decisions?
- (*d*) Are sufficient funds available for machine tool investment, or would a capital reserve scheme be helpful in this area?
- (*e*) Why is greater use not made of the existing facilities of renting, leasing or hire purchase buying?

It was agreed for the purpose of the survey to define machine tools as—"equipment for cutting or forming metal".

THE PRELIMINARIES

1. The Team

The pilot study as recommended to the National Economic Development Office and Machine Tools Trades Association covered an investigation of 60 companies in the engineering industry to be carried out by a team of consultants drawn from M.C.A. member firms. This team was to consist of a project director assisted by a small number of full time consultants. In fact, two full time consultants were selected, these consultants and the project director being drawn from different member firms.

At the outset it was decided that a postal questionnaire would be entirely inadequate even when allied to the information already in the possession of our members. Many of the questions to be answered involved matters of high policy which would need to be interpreted in the light of local circumstances. Moreover many of the answers to our enquiries would inevitably be personal opinions and it would be necessary to discover the reasoning behind these opinions and the supporting facts. Finally, in accordance with accepted management consultancy practice, it would be necessary to check as many as possible of the statements made to us since it is our experience—again borne out by the present enquiry—that sometimes a company genuinely believes it is doing certain things which in fact it is not doing or sometimes its answers may be coloured by what it knows it *should* be doing but is not doing. For all these reasons it was decided that a visit to each company was essential.

2. The Approach

Of the 60 companies to be studied the large majority were to be present or past clients of our members. Accordingly our members were asked to put forward the names of clients in the engineering industry who were users of machine tools and who they thought would agree to co-operate in the survey. This was done and from the names submitted a final selection was made. The basis of this selection is described in Appendix I.

Approaches to the clients selected were then made through the appropriate M.C.A. member to explain the purpose of the survey and invite their co-operation. The response was extremely gratifying and in only five instances did the company ask to be excused on the grounds of extreme pressure of work or the non-availability of the personnel we wished to see.

From Appendix I it will be seen that our sample was spread as representatively as possible over the major sectors of the engineering industry and over the different sizes of company. For the latter purpose companies were grouped in the following size ranges according to the numbers they employed:

Up to 200
201–750
Over 750

3. Data Required

A summary of the information required, for example figures of annual expenditure on machine tools, and including some of the more important questions to be answered, was then sent in advance to each company which had agreed to co-operate. In addition we asked for specific case examples, supported by the appropriate calculations, of the following:

(*a*) Purchase of a new machine tool for expanding manufacturing capacity either for producing a new product or increasing volume of an old.

(*b*) Purchase of a new machine tool to replace existing equipment.

(*c*) A decision not to purchase a new machine tool on the grounds that it was not an economic proposition.

Case examples were made available to us by 29 companies and enabled us to check the methods of investment appraisal in use. The absence of such examples also helped to substantiate our views on the policies of those companies which were not able to provide them. Some companies also went to the trouble of preparing comprehensive written answers in readiness for our visits.

A detailed questionnaire was also prepared for our own use under the four main headings of the terms of reference. This served as an aide-memoire during our interviews and also as a discipline for recording answers both during and after the interviews.

4. The Visits

In all, 60 companies were visited of which 55 were clients of our member firms.

Our visits extended from a few hours to a whole day and all levels of management were interviewed from chairman down. In some instances we made return visits. The close relationship existing between these companies and the members of M.C.A. gained us access to the top levels of management and we were given a great deal of confidential information which we suggest might not otherwise have been made available.

The fact that the enquiry was being carried out for the National Economic Development Council also stimulated interest and a willingness to help. We are glad to record that there is evidently a great deal of goodwill in industry towards "Neddy" and its aims.

The following is an analysis of the people interviewed:

Table 1

Status	Number
Chairman	7
Managing Director	28
Financial Director	7
Works/Production Director	16
Other Directors	20
Chief Accountant	8
Works/Production Manager	13
Chief/Senior Production Engineer ...	20
Others (at Managerial level)	12
TOTAL ...	131

The above does not include foremen and chargehands who were met and talked to during our tour of the factories.

In passing we would mention that many of the companies visited remarked on the number of postal questionnaires they were receiving and the work involved in answering them. Their criticisms inevitably throw doubt on the accuracy of some of the answers to questions of a non-statistical nature contained in these questionnaires.

SURVEY RESULTS

The results of the survey together with the detailed findings and recommendations are presented in the succeeding pages in the following form:

1. For each question in the terms of reference—an analysis and appraisal of the information given to us.
2. Following the final question—a summary of the overall situation together with recommendations for improvement.

We would again make the point that our findings are based not only on the discussions which took place during the visits and the evidence which we accumulated but also on the very helpful information provided by the M.C.A. member who had been in close touch with the company often over a considerable period.

We have also attempted wherever possible to quantify our answers so as to show the situation in its true perspective.

Question 1(a)

What are the current methods of investment appraisal? What, for example, is the minimum rate of return that is acceptable? Under which circumstances is the price of machine tools seen as a determining factor?

1. Approach

The method of investment appraisal in use and the rate of return expected was discussed at all management levels and frequently the answers differed in the same company. Also when the case studies were reviewed practice was seen to vary from what was said to be the rule. It must be accepted that considerations other than return on investment, for example technical or delivery, affect the decision to buy a machine tool—and rightly so—and thus the figure laid down for return on investment is often elastic. The figures included in our tables of results are the best compromise we could reach in the circumstances.

Examples of technical considerations, other than those directly concerned with cost saving, are greater flexibility, more rigidity, better quality performance, etc.

2. Methods of Investment Appraisal in General Use

It will be useful to outline briefly the more common methods of investment appraisal now in use and which we encountered in the survey. These methods will only be referred to in broad outline as they are described in detail in a variety of published literature and are becoming increasingly better known.

(*a*) Pay Back (P.B.) or Pay-Off

This in its simplest form consists of estimating the annual saving, in terms of labour, material and other direct costs such as tools, maintenance, etc., expected from the new machine as compared with the old and dividing it into the capital cost of the new machine less the resale value of the old. Usually the calculation ignores the effect of taxation and of tax allowances on the capital investment. Thus an estimated saving of £1,000 per annum from a machine costing a net £5,000 would represent a P.B. of 5 years.

Return on investment, sometimes used, is the inverse of P.B. and in the above example is 20 per cent on the original value of the investment. Sometimes depreciation is deducted from the annual saving before arriving at the figure of return.

(*b*) Discounted Cash Flow (D.C.F.)

This has variations and is sometimes known as the "Present Value System". D.C.F. measures the magnitude of the average rate of interest on the outstanding balances over the life of the investment, taking tax and tax allowances into account, this rate of interest then being compared with a required rate of return. Alternatively the "present value" can be calculated.

The method is described by Mr. A. M. Alfred, Chief Economist Courtaulds Ltd., in Woolwich Economic Papers Number 3 published by the Department of Economics and Management, Woolwich Polytechnic.

(*c*) M.A.P.I. (Machinery & Allied Products Institute of America)

This method was developed by George Terborgh in 1948 and since then has had a number of variants due to the somewhat complicated nature of the original method. It is primarily applicable to replacement projects and involves basically the comparison of the cost of keeping existing equipment for another year with the cost of buying new machinery.

We are informed that the method is now being used in the U.S.A. by a considerable number of companies.

3. Results

(*a*) Appraisal Methods

An analysis of the methods used by the companies in our sample is shown below. Those companies using DCF and MAPI also use P.B.

Table 2

Method	Size Group by No. of Employees			Total all Companies	Percent all Companies
	Up to 200	201–750	Over 750		
Established Method					
P.B. only	3	9	25	37	61
D.C.F. & P.B.	—	—	6	6	10
M.A.P.I. & P.B.	—	—	4	4	7
	3	9	35	47	78
No Established Method	2	5	6	13	22
Total ...	5	14	41	60	100
Companies supplying Case Studies	2	5	22	29	48

Notes:

1. P.B.—In all except 3 instances the companies *using the pay back* method ignored taxation and tax concessions. Also about one-third thought of the method in terms of "Return on Investment".

2. M.A.P.I. includes three companies who were "experimenting" with it and one which stated it was starting to use the method. We did not see a worked example.

(*b*) Rate of Return

The following is an analysis of the 47 companies in our sample which used the P.B. method of appraisal. This shows the period in years within which the company expects to recover the cost of the investment.

As previously indicated, 44 of these 47 companies ignored taxation and tax allowances in deciding on the P.B. period to use. In the three instances which took these into account, for the purposes of the analysis the period has been converted into the equivalent period ignoring taxation and tax concessions.

As stated later in the report we regard a method of appraisal which ignores taxation and tax allowances as inaccurate and misleading.

Table 3

Pay Back Method

Pay Back Period (years)	Size Group by No. of Employees			Total all Companies	Percent all Companies
	Up to 200	201–750	Over 750		
1	—	—	—	—	—
2	—	1	1	2	4
3	1	1	6	8	17
4	—	—	8	8	17
5	1	3	7	11	24
6	—	1	4	5	11
7	—	1	2	3	6
8	—	1	—	1	2
9	—	—	—	—	—
10	—	1	2	3	6
Unspecified ...	1	—	5	6	13
Totals ...	3	9	35	47	100

(i) The "weighted average" period for the 41 companies which use a specified P.B. period=5 years.

(ii) Those companies classed as "unspecified" used P.B. but said the period "varied with circumstances".

(*c*) **Price**

The following shows the degree of importance attached to the price of the machine tool when considering an investment.

Table 4

Degree of Importance	Size Group by No. of Employees			Total all Companies	Percent all Companies
	Up to 200	201–750	Over 750		
The determining factor ...	2	2	2	6	10
A significant element ...	3	9	29	41	68
Not significant	—	3	4	7	12
Variable	—	—	6	6	10
Totals ...	5	14	41	60	100

Companies listed under "variable" found themselves unable to generalise and said each case had to be considered on its merits.

4. Comments

(*a*) Appraisal Methods

Our enquiry covered investment in machine tools for all purposes, viz:

Obsolescence

Replacement of worn out machines.

Increasing output

Expanding manufacturing capacity to produce a new product or increase volume of an old.

Cost Reduction

Replacement of an existing machine tool in working order by a new one to achieve a reduction in manufacturing costs.

(i) Obsolescence

The replacement of obsolete plant is usually covered by an annual allocation of money which may be equivalent to the depreciation written off against plant in the company's accounts. To this may be added—or subtracted—an additional amount depending on the prosperity of the company. In companies which had an annual capital budget—36 in our sample of 60, or 60 per cent—control seemed reasonable but in others replacement of ageing plant depends very much on what money is available or the strength with which the works presents its case.

(ii) Increasing Output

Table 2 shows 6 companies in our sample—all large—as using the D.C.F. method. In every case except one this was being applied to the evaluation of large new projects involving expenditure of hundreds of thousands or even millions of pounds. The method was considered too complicated and involving too many assumptions for applying to individual machines and these were being evaluated on the basis of pay-back.

In some instances it seemed to us that the basis on which the company had decided to spend a great deal of money on expansion was somewhat haphazard and included a great deal of "faith". In others the project was costed out in the conventional manner without discounting the cash flow as in D.C.F. and the straightforward return on investment calculated. In others a new product requiring new machinery had to be undertaken—in the words of the company—"in order to survive", and the return on the investment was secondary—within limits. Examples of this were gaps in the product range suddenly filled by a competitor, customer complaints of quality, etc.

(iii) Cost Reduction

The method of appraising the return on an investment intended to reduce costs is largely pay-back. In fact, of the 60 companies involved in the survey 47 used P.B. in some form or other. Of these all except three *took no account* of the very substantial tax allowances that apply to new machinery particularly in the first year of purchase.

In those instances where case studies were produced—29 in all or 62 per cent of the companies using an established appraisal method—the procedure is for works personnel, such as the production engineer, to submit in writing the total annual direct savings estimated to result from the purchase of the new machine tool. These vary in form, in seven cases labour savings only being included while in the remaining 22 at least one further item was taken into the calculation. However, few took into account all the items which in our view should have been included. Sometimes overhead expenses are included in the form of machine hourly rates but this may not be strictly allowable because total volume is not always increased. The estimate of total savings is then passed to the appropriate authority which authorises the purchase or not depending on how the P.B. period compares with that laid down as company policy.

In the medium sized and larger firms there are usually several management levels at which expenditure can be authorised—for example works director, managing director, board—each level below the top having a limit to the amount it can approve. The number of levels and the maximum amount each can authorise varies greatly depending on the size of the company and sometimes on its prosperity and also we found a wide variation in the amount of detail required to substantiate the case put up to it.

In those instances where case studies were not produced we were told that a rough estimate of the savings was passed, sometimes verbally, to the person or body authorised to approve the expenditure. Presumably if a company does use P.B. an estimate of the potential savings is made in some form although its accuracy may be open to doubt.

(iv) General

Referring again to Table 2, thirteen companies or 22 per cent of the total are shown as having no clear policy in regard to investment appraisal. In these cases we were told machine tools were bought for such reasons as:

> "When the works manager makes up his mind he wants it."
>
> "The machine *has* to be bought."
>
> "When it is needed—plenty of cash available."

An additional factor which occasionally affects a decision to re-equip is the effect on published profits of the increased depreciation in the early years of a major project.

(*b*) **Return on Investment**

Table 3 gives an analysis of the periods used by the companies employing the pay-back method of appraisal. In times of financial difficulty these periods tend to shorten and one company told us they expect to recover the cost of an investment in one year when money is scarce.

It will be seen that the pay-back periods extend from 2 to 10 years with a preponderance in the 3–7 year range. As mentioned earlier, considerations other than return on investment, such as technical, delivery, the need to take over work from a sub-contractor so as to have better control, etc., affect the issue and the periods in many cases are elastic.

(*c*) **Price of Machine Tools**

In Table 4, 41 companies or 68 per cent of the total are shown as considering price to be "a significant element". By this is meant that price is not the predominant factor but is one of the factors taken into account but given no more weight than any other factor. The other considerations are technical and delivery and often these take priority over price—within limits.

We found it difficult to generalise as each purchase could involve different priorities.

The companies which considered price a major factor were mostly short of cash and in these cases price would greatly influence the decision to buy a reconditioned machine instead of a new one. Companies which said price was not significant were either very prosperous or engaged in very costly development work where the price of the machine tool was relatively unimportant.

Question 1(b)

Are present methods of investment appraisal adequate? If they are not, why are better methods not used?

1. Approach

The methods of investment appraisal in use in our sample are described under question 1(*a*) and analysed in Table 2. From this we have seen that 22 per cent employ no established method and of the remaining 78 per cent, 73 per cent use straightforward pay-back ignoring tax allowances. Table 3 shows the spread in the periods used under the P.B. method.

In addition 10 per cent employ D.C.F. for major projects involving sums of hundreds of thousands of pounds or more.

To answer the question we will need to consider the following:

(*a*) The adequacy of the methods used for estimating the annual financial benefits likely to result from the installation of the machine tool.

(*b*) The adequacy of the methods of appraising the economics of the investment having regard to the price of the machine tool and the annual benefits expected.

2. Tax Allowances

Although the following Question 1(*c*) deals specifically with the effect of the current tax concessions on investment decisions, our answers to the present question must inevitably make reference to these concessions. It is, therefore, appropriate to set out here the current rates of the tax allowances on new machinery.

These are in the following form:

Investment Allowance	30 per cent
Initial Allowance	10 per cent
Annual Allowance Variable between 15 per cent and 25 per cent according to the equipment. For machine tools say—	20 per cent

Thus in the *first* year relief from income and profits tax totalling 10/9d. in the £ (7/9d. income tax plus 15 per cent or 3/- profits tax) is claimable against 60 per cent of the cost of the machine tool.

In *succeeding* years the same rate of relief is claimable on the annual allowance of 20 per cent on the "reducing balance" which is calculated as under:

In Year 2 the reducing balance is:
  Original Cost less (Initial + Annual Allowances) i.e. 70 per cent of original cost.

In Year 3 reducing balance is:
  70 per cent—(20 per cent x 70 per cent)=56 per cent of original cost, and so on.

Assuming the plant had no value at the end of its life, 130 per cent of the cost of the machine is allowed against income and profits tax.

3. Comments

(*a*) Estimate of Financial Benefits

As mentioned previously these are usually produced by works personnel. Of the 29 companies which provided case examples 7 took labour savings only into account and occasionally the benefits were over estimated by assuming too great an increase in volume. In other instances additional factors had been included such as anticipated reduction in tooling costs, maintenance costs, rejects, material usage, etc.

Most of the companies which did not use a formal written estimate said they used labour saving only as the basis. While this is usually the major factor—except in certain types of machine tools—the other factors can be important.

While in some instances the estimate of financial benefits had been reduced to a discipline this was not so in the majority of companies. In our view a regularised and simple procedure using a properly designed calculation sheet should be established and used in all cases where the cost of the machine tool exceeds an agreed figure. This would not only introduce tidy thinking but would serve as a check that all the factors had been taken into account.

(*b*) **Appraising the Investment**

(i) **D.C.F.** The Discounted Cash Flow Method, still in its infancy in British industry, appeared to be causing no undue difficulty in the 6 companies using it. As previously stated its use was mainly confined to major projects involving a large investment and these generally had not proceeded to a stage sufficient to enable actual results to be compared with those forecast. In the hands of competent company accountants the method had been reduced to a workable routine but we noticed that in few cases had top management understood the basis of the method or been properly "sold" on its advantages. We were told by a number of directors that the method was too complicated and involved too many assumptions to be of value but in our view this amounted to the fact that it had not been explained to them with sufficient clarity. It is doubtful whether DCF would be, in the conditions of industry, a workable method for appraising investment in individual machine tools. It is complicated particularly to minds not experienced in financial appraisal and it involves making various assumptions which may or may not hold good. For appraisal of major projects it appears to be an improvement on existing methods but it must be presented in a more simple form if the average management is to accept it.

To illustrate our point the following is the introduction to an article on D.C.F. published recently by a widely read and highly respected journal:

> "Any businessman who has an inkling of how to work out a redemption yield on a fixed-interest security standing at a discount or a premium should understand the essence of DCF."

(ii) **Pay Back.** P.B.—ignoring the effect of taxation and tax allowances—is the simplest "rule of thumb" method for appraising investment. In the days—some 10 years or so ago —when the only allowance against tax was a relatively modest annual allowance the pay back period before tax could be approximately doubled to arrive at a reasonable figure for the pay back period after tax, i.e. the time taken to recoup the cost of the investment out of profits after tax.

However, the present tax allowances set out earlier in the answer to the present question are now of such magnitude as to alter the situation radically and a method of appraisal using P.B. without taking the allowances into account can only be regarded as inaccurate and misleading.

Taxation and Tax Allowances

From Table 3 we have shown that the "weighted average" period for the 41 companies in our sample which use a specified P.B. period is *5 years*.

Appendix IIA shows a worked example taking into account the effect of taxation and tax allowances on an investment involving a machine tool costing £5,000 and estimated to achieve a saving of £1,000 per annum. Thus, ignoring taxation and tax allowances—as do the large majority of our sample—the P.B. period in our example is *5 years.*

In the mind of the average industrialist the time taken to recover the cost of the machine tool out of profits, *after* tax, will be considerably longer than this.

However, as the example shows, due to the substantial tax allowances, the cost of the machine tool is actually recovered in 5 years out of profits, *after tax.*

The evaluation of such an investment over a period of, say, 10 years can be carried out approximately as follows.

Let us assume the rate of return on assets employed in the average company is 13 per cent gross or 6 per cent net.* Then a sum of £5,000 invested at 6 per cent net compound interest for a term of 10 years is worth at the end of that period:

£5,000 x 1.79=£8,950

Referring now to the example shown in Appendix IIA and ignoring the time lag before the concessions take practical effect, the additional annual profits resulting from the purchase of the machine could also be invested at 6 per cent net compound interest for the respective remaining periods of the 10 year term. The appropriate calculations are shown in the example and assuming at the end of the 10 years the machine is worth 10 per cent of its original cost the value of the investment at the end of the period is seen to be about—£11,500.

This is equivalent to investing £6,460 for 10 years at a compound interest rate of 6 per cent net instead of the £5,000 actually invested.

Appendix IIB shows a similar calculation using a 7 year P.B. period. From this it will be seen that the cost of the machine is recovered from profits *after tax* in about 6½ years and that at the end of the 10 year period the value of the investment is about £9,800.

This is equivalent to investing a sum of £5,480 for 10 years at a compound interest rate of 6 per cent. net.

It can also be shown that a P.B. period of 3 years ignoring tax concessions is equivalent to recovering the cost of the machine out of taxed profits in less than 4 years.

A method of appraisal ignoring tax allowances is obviously misleading but nevertheless a company might be using a P.B. period which—perhaps fortuitously—gives the right answer. One purpose of the examples—which do not claim to be actuarily perfect—is to illustrate that the "weighted average" P.B. period of our sample is too stringent.

Thus many companies in our sample and particularly those using a shorter period than the average must be failing to take advantage of other worthwhile investments.

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* Ignoring capital allowances.

Life of the Machine

The pay back method takes no account of the earning life of the machine. We in fact get the same answer whether the machine is expected to be in use and earning profits for 5, 10 or 20 years.

This is another way of saying that P.B. does not take into account the profitability of the investment since this will depend on the working life of the asset. All it does is to indicate how long the investment will be "at risk".

4. Opinion

To sum up, for normal scale investment, the appraisal methods used by our sample of 60 companies are as follows:

	No. of Companies	*% Total Sample*
No established method	13	22
*P.B. excluding tax allowances	44	73
P.B. including tax allowances	3	5
	60	100

* "Weighted average" period is 5 years (excluding 6 companies with no defined period).

Having regard to the above and our preceding remarks we are of the opinion that present methods of investment appraisal are *not* adequate.

What is required is:

1. A procedure in simple terms and including reference tables for enabling the average industrialist to determine the economics of an investment taking into account taxation and tax allowances.
2. A working instruction, including a calculation sheet, for determining the financial benefits to be expected from the installation of a machine tool. The economics of the investment would then be appraised from the cost of the machine tool and the extent of the benefits.

Even in those cases where other considerations, such as technical or delivery, may take priority at least the purchaser should establish the true return he is likely to get from his investment.

The main reasons why better appraisal methods are not used will be evident from the foregoing. In summary they are:

D.C.F. Some of the people interviewed—apart from those using the method—had heard of D.C.F. but very few had even a working knowledge of it. We got the impression that they had been frightened off by some of the literature on the subject and it is evident that more education and a simpler presentation is required in those cases where the method is applicable.

P.B. The old rule-of-thumb method had persisted because it was easy to use. Also most people had not realised the effect of the tax allowances while some of those who did had been unable to apply them. What did surprise us was the number of people at quite high level who did not know the extent of the allowances.

Question 1(c)

What influence do tax concessions have on investment decisions?

1. Approach

It has been shown under Question 1(*a*) that tax concessions are not normally taken into account—apart from a few instances—when using the normal method of investment appraisal viz. pay-back. However, the present question has been interpreted in the wider sense of discovering whether the tax concessions now in force are providing the direct incentive to greater investment which it was hoped they would by making more money available.

The influence of tax concessions was discussed with every person interviewed. A disturbing state of affairs was revealed in that a considerable number of those seen were not aware of the magnitude of the concessions or of the tax relief which could be claimed. Understandably this lack of knowledge was greater at the lower levels but even so the extent of knowledge at the upper levels was not much higher.

This may not be so surprising in view of the prevailing method of investment appraisal. Also it might be argued that as long as the company accountant or secretary and the managing director were aware of the concessions, awareness at the lower levels was unimportant. We suggest, on the contrary, that it is highly desirable for all responsible levels of management to know the facts since the initiative to replace by a better machine originates more often than not at the lower levels.

Our views as to the influence of tax concessions on investment decisions are based on the statements made to us by those whose ultimate responsibility it is to make the decisions, i.e. directors.

2. History of Tax Concessions

It will be useful to record the history since 1946 of the tax allowances applicable to new plant and machinery so as to show the changes which have occurred.

Table 5

New **Plant** and **Machinery** **Tax** **Allowances**

Date	Investment	Initial	Annual
6 April 1946 ...	—	20%	12½% x 5/4
6 April 1949 ...	—	40%	"
6 April 1952 ...	—	—	"
15 April 1953 ...	—	20%	"
6 April 1954 ...	20%	—	"
18 February 1956 ...	—	20%	"
15 April 1958 ...	—	30%	"
7 April 1959 ...	20%	10%	"
5 November 1962 ...	30%	10%	20%

3. Consumption of New Machine Tools in U.K.

It will also be useful to record the consumption in the United Kingdom of new machine tools in recent years. Although there was some increase in 1961 and 1962 this was not maintained in 1963. Otherwise there seems little correlation between consumption and the tax concession in force allowing for the usual time lag.

Table 6

United Kingdom Consumption of Metal Working Machine Tools

Year	Consumption £ Thousand
1954	60,441
1955	70,695
1956	85,536
1957	88,381
1958	77,090
1959	73,365
1960	89,665
1961	114,705
1962	120,566
1963	101,262

Note: Consumption is U.K. production, plus imports minus exports.
Production and export figures based on deliveries by manufacturers.
Imports from Customs and Excise Statistical Office.

4. Results

The varying degrees of influence exerted by tax concessions on investment decisions are analysed in the following table.

Table 7

Degree of Influence	Size Group by No. of Employees			Total all Companies	Percent all Companies
	Up to 200	201–750	Over 750		
No Direct Effect	4	14	39	57	95
Prime Importance ...	1	—	1	2	3
Not Applicable	—	—	1	1	2
Totals ...	5	14	41	60	100
Recognised as an aid to cash flow	1	4	11	16	27

5. Comments

It is quite clear that the tax concessions in their present form have little direct influence on investment decisions and are thus not serving the purpose for which they were intended. The 16 companies (27 per cent of our total) included in the category "Recognised as an aid to cash flow" acknowledged that the concessions had made more money available but only 9 out of the 16 said they were reasonably certain this had resulted in their buying more machine tools than they would otherwise have done. The remaining 7 considered that the tax concessions might have increased the amounts spent on machine tools and of these 3 freely admitted the effect had been to improve their profit position and thus the amount available for distribution to their shareholders.

Three companies said they were only influenced by the amount of profit before tax. Also three companies said they only took tax concessions into account when deciding whether to buy a reconditioned machine or a new one.

The main reasons given for the failure of the concessions to create the impact intended are:

(i) The incentive is too remote. The company has to have the cash available now if it wishes to buy a machine tool. The knowledge that it will recover the allowances in 1–2 years is not sufficient encouragement.

In the few companies in our sample situated in Development Districts the outright grant which they received in respect of plant and equipment seemed to have had a bigger effect than the normal tax concessions. This, however, is only an impression gained from a very small number of companies.

(ii) The concessions are too liable to change. Many companies have to plan well ahead and they claim that as they cannot be sure of what the concessions will be when the machine tool is received they ignore tax concessions in their calculations.

(iii) They must be making profits before allowances against tax can be claimed. It was not always realised that the claims can be carried forward.

6. Opinion

As previously stated the answer to the question must clearly be that tax concessions have little influence on investment decisions. This lines up with the general experience of our members.

In our opinion the main reason is that the intended inducement does not obey a fundamental rule of an incentive. This is that to be effective the pay-off must follow as closely as possible the action which it is intended to stimulate.

Also the additional money made available through increasing the allowances may be spent in directions other than that intended.

There are a number of alternatives which might well constitute a more effective inducement to greater investment. These are referred to in the summary.

Question 1(d)

Are sufficient funds available for machine tool investment, or would a capital reserve scheme be helpful in this area?

1. **Approach**

The availability of funds for machine tool investment was discussed at all levels since although it is at top managerial level that the financial situation is known and policy decided it is the lower levels who see the effect of the policy, i.e. to what extent requirements for machine tools are met. In a number of instances we were able to see, in the capital budgets, the sums allocated to investment in plant and machinery and the amounts spent and also for public companies the profit record.

In the main, however, we have had to rely on the opinions expressed in deciding whether sufficient funds were available for buying new machine tools. This applies particularly where cash was not immediately available but the company anticipated no difficulty in borrowing.

In discussing the question of a capital reserve scheme we outlined as one example the investment reserve scheme for economic stabilisation currently in operation in Sweden. This is described in a booklet entitled "The Corporate Income Tax in Sweden" which was provided by the Swedish Chamber of Commerce for the United Kingdom, in London. According to this scheme a company may place up to 40 per cent of its pre-tax profits into an investment reserve all or part of which is subsequently released by the Government, without attracting tax, to purchase equipment when the economic and employment situation in the country so warrants.

Another example used was the outline scheme proposed by the Machine Tool Trades Association which is attached as Appendix III.

2. **Results**

(*a*) Our estimate of the availability of funds for machine tool investment is as follows:

Table 8

Availability of Funds	Size Group by No. of Employees			Total all Companies	Percent all Companies
	Up to 200	201–750	Over 750		
Adequate funds	5	10	32	47	78
Insufficient funds	0	4	9	13	22
Total	5	14	41	60	100

(*b*) The opinions as to whether a capital reserve scheme would be helpful in stimulating machine tool investment are as follows:

Table 9

Opinion	Size Group by No. of Employees			Total all Companies	Percent all Companies
	Up to 200	201–750	Over 750		
Helpful	2	10	27	39	65
Not Helpful	3	3	8	14	23
No Opinion	0	1	6	7	12
Total	5	14	41	60	100

3. Comments

In the main it would appear that sufficient funds *are* available for machine tool investment. However, this is a case in which it is particularly difficult to generalise and we would say that there is still too high a proportion of companies where the investment is determined by the money available rather than by energetically looking for a worthwhile investment and then finding the necessary money by some means, for instance, by borrowing or even leasing or hire purchase.

We would also make the point that the availability of funds had to be assessed in relation to the company's present scale of operations. Several respondents expressed the view that too many companies in the U.K. were making the same or similar products for too small a market and according to them this meant that few could afford or justify massive mechanisation or automation whereas if they were to combine into larger units this would be possible.

65 per cent of our sample thought a capital reserve scheme of the kind in which profits before tax could be set aside for the purchase of machine tools would be helpful. This might be a more obvious form of incentive than the present one of delayed tax concessions although an element of delay would presumably still be present. Also a scheme on the lines of that in use in Sweden might help to smooth out the peaks and troughs in industrial activity and achieve greater stability in the economy.

Question 1(e)

Why is greater use not made of the existing facilities of renting, leasing or hire purchase buying?

Answer

Ten companies or 17 per cent of our sample had rented machine tools at some time or another but only in small quantities and some of these had also bought machines on hire purchase. The reason for renting is either shortage of cash or—and this applied to the majority of the 10 cases—the fact that the company only expected to use the machine tool for a comparatively short period. In such circumstances the company felt renting was worth while—despite what it usually considered costly rates—as it did not want to be left with an expensive machine on its hands at the end of the period as might happen if it bought.

The large majority of companies were firmly against renting or hire purchase on the grounds that it was too costly. Those with the necessary cash preferred to buy outright. Those without the cash either obtained it by bank or other borrowing or deferred the purchase rather than rent. We found a strong prejudice against—in the precise words used by a number of companies—"swelling the profits of the Finance Houses".

We strongly suspect that few companies had worked out the effects of taxation and tax concessions on leasing as compared with purchase on bank overdraft or other borrowing. The calculations are complicated but here again is a field in which clear guide rules would be helpful to industry.

In our view, the objections to the greater use of present facilities for renting, leasing or hire purchase buying are on cost and psychological grounds.

SUMMARY

It is of great concern to find that:

1. The substantial tax concessions intended to stimulate investment in machine tools are having a very limited effect.
2. The methods of investment appraisal in use by the U.K. engineering industry are either non-existent or largely inaccurate and misleading.
3. As a result of the above, many firms in the engineering industry are failing to recognise worthwhile investments and are thus not availing themselves of the benefits which greater use of modern machine tools would bring.

We suggest this situation calls for immediate action along the following lines.

1. Incentive to Greater Investment

Alternatives to the present basis should be investigated forthwith. We do not at this stage have sufficient information to recommend any particular alternative but the following is a list of possibles:

(*a*) A repayment to the purchaser, immediately on the purchase of a new machine tool, of an amount equivalent to the tax relief on at least the investment allowance. This would be the bold way and would accord with a basic principle of an effective incentive, viz. a minimum of delay between the event and the reward.

(*b*) A capital reserve scheme similar to that currently in use in Sweden. This would involve seeking the views of Swedish industrialists as to the efficacy of the system under the conditions of Swedish industry. It is possible that other countries have similar schemes.
Alternatively the M.T.T.A. proposals could be investigated further.

(*c*) The investment and initial allowances to remain and annual depreciation to be allowed on "replacement" value. This suggestion was put forward by several companies and is not new. However, this still does not avoid the element of delay.

(*d*) A payroll tax that really "hurts". This again was suggested by a few companies.

If however it is decided to continue with the present basis there must be much greater publicity of the magnitude of the present concessions and what they mean to the industrialist. Their importance is not yet fully realised by industry.

Whatever basis is decided on there must also be some guarantee of continuity to convince industry that Government intention is to promote steady industrial growth in stable conditions and that the concessions are not just a temporary injection to correct a short term fluctuation in the economy.

2. Appraisal Methods

As previously mentioned, industry needs help in a simple and readily usable form to enable the merits of a proposed investment to be evaluated quickly. We suggest the need is twofold:

(i) A procedure, including reference tables, to enable the average industrialist to appraise an investment taking taxation and tax concessions into account. Having done this accurately he can then see whether the return equals or exceeds the rate of return he requires in the light of his own circumstances.

(ii) A working instruction, including a calculation sheet, for determining the financial benefits to be expected from the installation of a new machine tool. These should include the use to be made of any increased capacity made available. This will be a basic document in appraising the investment.

* * *

It is hoped that the findings and recommendations will represent a practical and positive contribution to increasing the rate of profitable investment in new machinery.

We would again like to express our appreciation of the help and co-operation received from the companies we visited. Many chairmen and directors spent a great deal of time with us and the detailed information provided in many instances must have involved considerable effort.

We would also like to thank those members of the National Economic Development Office and of the Machine Tool Trades Association who were concerned with the survey, for their friendly assistance and advice.

APPENDIX I

Selecting the Sample

Although 60 companies only were involved in the study we wanted to select our sample on as representative a basis as possible. The alternatives available were to choose the companies in accordance with one or more of the following:

(*a*) The distribution of the machine tool population—by sectors of the engineering industry.

(*b*) The distribution of actual expenditure on machine tools—by sectors of the engineering industry.

(*c*) The size group of the company having regard to the relative importance of each group as measured, for example, by the total value of sales or by total capital expenditure.

(*d*) Geographical location.

(*a*) Machine Tool Population

This was considered to be a prime factor in the selection of the sample. The distribution of the sample over the major sectors of the engineering industry in accordance with the relative numbers of machine tools in those sectors seemed to us to be preferable to basing the distribution on actual machine tool investment in a recent period. We wanted our sample to line up more with where investment in new machine tools *ought* to take place rather than where it *had* taken place. To base it on the latter might have weighted our sample too much in favour of the more progressive sectors of the industry.

The method adopted was as follows. In December 1961 "Metalworking Production" published a "First Census of Machine Tools in Britain" which included a table showing under 19 industry group headings the number of machine tools then in use. We assembled the appropriate headings into 5 main sectors of the engineering industry, shown in the following table, and expressed the number of machine tools in each sector as a percentage of the whole. We then selected our sample so that the distribution, over the same 5 sectors, of the machine tools in the sample was as nearly as possible the same as in the census, the numbers of machine tools in the sample being arrived at on the basis of the number of employees in each sector as shown in Table IC forming part of this Appendix. In addition, in making our selection, we took into account the distribution within each sector by company size as explained later.

A comparison of the distribution as per census and our sample is as follows:

APPENDIX I CONTD.

Table IA

Sector of Engineering Industry	Distribution of Machine Tools	
	Per Census %	Per Sample %
Heavy mechanical	15	8
Medium mechanical ...	60	70
Light mechanical	10	5
Heavy electrical	6	6
Light electrical	9	11
	100	100

It is appreciated the method is only approximate but it would seem to be quite sufficient for our purpose.

(*b*) **Actual Investment**

In the event it proved difficult to obtain accurate figures for investment in machine tools from more than a small proportion of the companies visited. While most companies were able to separate investment in "plant and machinery" from overall capital investment the extraction of figures for expenditure on machine tools alone proved laborious and a task which we were reluctant to ask them to undertake unless we felt it was essential for our purpose. Analysis in a number of cases showed that the proportion of machine tool investment to total investment in plant and machinery varied widely from company to company and from year to year so that to assume a fixed relation would have produced a highly inaccurate result.

In any case, for the reasons stated under (*a*) above, we considered it preferable to distribute our sample over the industry in accordance with where the machine tools are actually located.

(*c*) **Size Groups**

It was necessary to spread our sample over all sizes of company and 3 broad size groups, by total numher of employees per company, were taken, viz.:

Up to 200
201–750
Over 750

However, the number of companies in each group could obviously not be the basis of selection and it was decided to weight the size groups according to the total value of sales for each. As a check we also took capital expenditure.

APPENDIX I CONTD.

A comparison, by size groups, of the sample finally selected with the basis described above is shown in the following table:

Table IB

Size Group (Total Employees per Company)	Sample		Pattern of Engineering Industry*	
	No. of Companies	% Total Companies	% Total Sales	% Total Capital Expenditure
Up to 200	5	8	10	9
201–750	14	23	14	12
Over 750	41	69	76	79
Total ...	60	100	100	100

* 1958—Census of Production

The companies in each of the 5 main sectors were selected so that the distribution by size group in each sector corresponded as far as possible with the overall distribution shown above.

(*d*) **Geographical Location**

The sample is also spread geographically over the United Kingdom to correspond as far as possible, within the limits of the numbers involved, with the distribution of engineering industry.

APPENDIX I CONTD.

Table IC

Analysis of Sample by Industry Sectors

Sector of Engineering Industry	Total Employees	Total Machine Tools (per Census)		Employees per M/c Tool	*Total Sample Employees	*Total sample of M/c Tools	
		Number	%			Number	%
				(1)	(2)	(3)	
Heavy Mechanical ...	583,700	163,730	15	3.6	43,520	12,100	8
Medium Mechanical ...	1,477,200	668,606	60	2.2	230,240	104,700	70
Light Mechanical ...	339,200	112,119	10	3.0	24,860	8,300	5
Heavy Electrical ...	307,600	71,789	6	4.3	37,970	8,800	6
Light Electrical ...	407,400	106,241	9	3.8	61,900	16,300	11
TOTAL ...	3,115,100	1,122,485	100	2.8	398,490	150,200	100

* Excludes 4 respondents in industries not covered by "Metal Working Production " Census

Note: Column 3=Column 2 divided by Column 1

APPENDIX IIA

Pay-back (P.B.) Method of Investment Appraisal

Example Showing Effect of Tax Allowances

5-year P.B.

1. Assume cost of new machine is £5,000.
2. Assume estimated savings (labour, material, maintenance, etc.) at present volume of throughput = £1,000 per annum.

Note

If the whole of the increase in productivity of the new machine can be utilised to increase total volume of output the return will be greater than shown below. This is not always immediately possible in practice.

The actual tax relief will not be received until later than shown. For the sake of simplicity it has been included in the year on which it is based.

APPENDIX IIA CONTD.

YEAR	1	2	3	4	5	6	7	8	9	10
(*a*) Cost of Machine	£5,000	—	—	—	—	—	—	—	—	—
(*b*) Estimated annual savings	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
(*c*) Amount on which Tax Relief claimable* ...	3,000	700	560	448	358	286	229	184	147	118
(*d*) Change in profit subject to tax (*b*–*c*) ...	—2,000	300	440	552	642	714	771	816	853	882
(*e*) Change in tax payable on (*d*) (Income & Profits Tax at 10/9d.)	—1,075	161	237	297	345	383	415	437	458	475
(*f*) TOTAL CHANGE IN PROFITS AFTER TAX (*b*)–(*e*)	£2,075	839	763	703	655	617	585	563	542	525
(*g*) CUMULATIVE CHANGE IN PROFITS AFTER TAX (ignoring interest)	£2,075	2,914	3,677	4,380	5,035	5,652	6,237	6,800	7,342	7,867

* TAX RELIEF Year 1 Investment Allowance 30%
Initial Allowance 10%
Annual Allowance (say) 20% i.e. Total 60% x £5,000 = £3,000

Year 2 Annual Allowance only—20% of Written Down Value i.e. 20% x (£5,000 less Initial and Annual Allowance Year 1)
=20% x (£5,000 x 70%) = 20% x £3,500=£700
Year 3 Annual Allowance 20% of Written Down Value
20% x (£3,500—700) = 20% x £2,800 = £560

Year 4 20% x (£2,800—560) = 20% x £2,240 = £448

Year 5 20% x (£2,240—448) = 20% x £1,792 = £358 and so on

APPENDIX IIA CONTD.

Annual Profits Invested at 6 per cent compound interest for remainder of 10 year period

Year	£	*Period Years*	*Factor*	*Amount*
1	2,075	9	1.69	3,500
2	839	8	1.59	1,340
3	763	7	1.50	1,140
4	703	6	1.42	1,000
5	655	5	1.34	880
6	617	4	1.26	780
7	585	3	1.19	700
8	563	2	1.12	630
9	542	1	1.06	575
10	525	0	1.00	525
				£11,070
	Residual value of Machine (say 10%)			500
			TOTAL	£11,570

Using the same rate of interest viz. 6 per cent net compound, this is equivalent to a sum of £6,460 invested for 10 years i.e. an increase of £1,460 over and above the original £5,000.

APPENDIX IIB

Pay-back (P.B.) Method of Investment Appraisal

Example Showing Effect of Tax Allowances

7 year Pay-back

YEAR	1	2	3	4	5	6	7	8	9	10
(*a*) Cost of Machine	£5,000	—	—	—	—	—	—	—	—	—
(*b*) Estimated annual savings	714	714	714	714	714	714	714	714	714	714
(*c*) Amount on which tax relief claimable ...	3,000	700	560	448	358	286	229	184	147	118
(*d*) Change in profit subject to tax (*b*–*c*) ...	—2,286	14	154	266	356	428	485	530	567	596
(*e*) Change in tax payable on (*d*) (Income & Profits Tax at 10/9d.)	—1,229	8	83	143	191	230	261	285	305	320
(*f*) TOTAL CHANGE IN PROFITS AFTER TAX (*b*)–(*e*)	£1,943	706	631	571	523	484	453	429	409	394
(*g*) CUMULATIVE CHANGE IN PROFITS AFTER TAX (ignoring interest)	£1,943	2,649	3,280	3,851	4,374	4,858	5,311	5,740	6,149	6,543

APPENDIX IIB CONTD.

Annual Profits Invested at 6 per cent compound interest for remainder of 10 year period

Year	£	*Period Years*	*Factor*	*Amount*
1	1,943	9	1.69	3,280
2	706	8	1.59	1,120
3	631	7	1.50	950
4	571	6	1.42	810
5	523	5	1.34	700
6	484	4	1.26	610
7	453	3	1.19	540
8	429	2	1.12	480
9	409	1	1.06	430
10	394	0	1.00	394
				£9,314
Residual value of Machine (say 10%)				500
			TOTAL	£9,814

Using the same rate of interest, viz. 6 per cent net compound, this is equivalent to investing a sum of £5,480 for 10 years.

APPENDIX III

The Machine Tool Trades Association

Outline of Possible Scheme for Encouragement of More Rapid Replacement of Plant

1. A new form of document somewhat similar to a tax reserve certificate should be issued by the Government and should be entitled "a plant modernisation certificate".
2. A person carrying on a trade requiring the use of plant and machinery should be entitled during or within X months after the end of any accounting period to purchase plant modernisation certificates for an amount not exceeding X per cent of his profits for that period as computed for profits tax purposes.
3. Relief from income tax and profits tax at the rates applicable to the accounting period in question should be given on Y per cent of the amount expended in acquiring plant modernisation certificates.
4. At any time within Z years from the date of purchase of a certificate the taxpayer should be entitled to submit on an appropriate form particulars of a liability incurred by him for the acquisition of new plant (to be defined for this purpose) and if necessary this form should be supported by statements from suppliers.
5. On production of this form properly authorised the taxpayer should be entitled to repayment of an equivalent amount of the plant modernisation certificates held by him.
6. The plant actually purchased should be entitled to investment, initial and annual allowances on the normal basis.
7. Until expended the plant modernisation certificates should carry interest at the same rate as and on similar conditions to tax reserve certificates.
8. The plant modernisation certificates would not be negotiable in any circumstances. They would only be transferable:
   (*a*) on a bona fide amalgamation, or
   (*b*) on a reconstruction where no change of beneficial interest is involved.
9. If a plant modernisation certificate is not utilised for the acquisition of plant within a period of C years from the date of purchase it should be repayable at par without interest. D per cent of the amount so repaid would be liable to income tax and profits tax at the rates in force at the date of repayment. Certificates would not be encashable at any earlier date except on condition that a discount would be charged in addition to the payment of tax on D per cent of the amount involved.

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A Survey by the Managements Consultants' Association

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1965

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FOREWORD

This Report was prepared by the Management Consultants' Association, having been commissioned jointly by the National Economic Development Office and the Machine Tool Trades Association.

It was considered by the Economic Development Committee for the Machine Tool Industry, and afterwards submitted to the National Economic Development Council. In view of its interest to those making investment decisions the Council agreed with the recommendation that it should be published.

March, 1965